HUMAN CAPITAL: POPULATION

EE 462 Development Macroeconomics

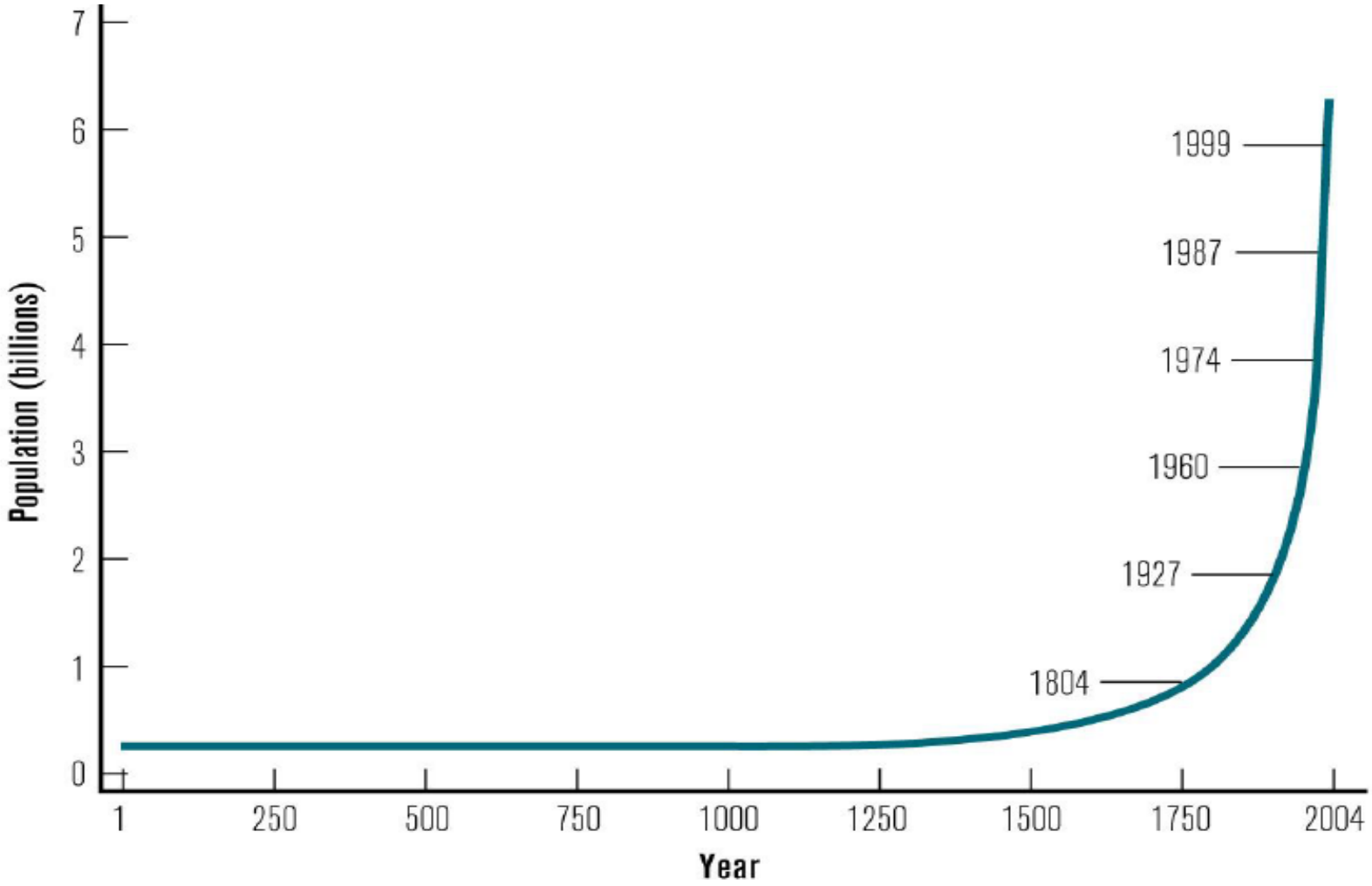
Topics

- Demographic Transition
- Cause of Population Growth
- Population Growth and Economic Development
- Population Policy

Questions of Interests

- Do rising population numbers matter?
- Should we reduce population growth?
- Is population growth “good” or “bad” for development?
- What is the relationship between population growth and economic development?

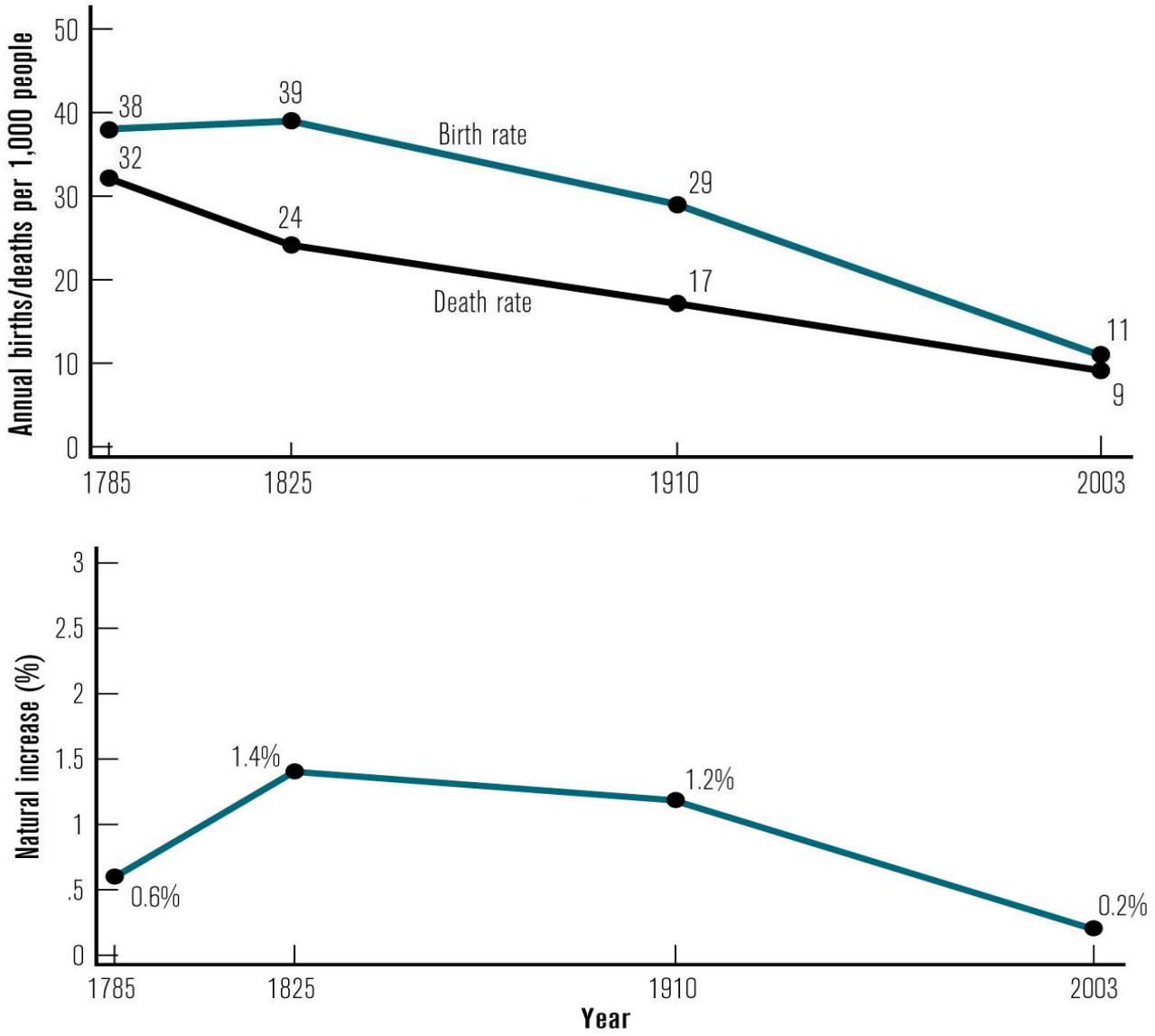
World Population Growth through History: Years Need to Add 1 Billion More People



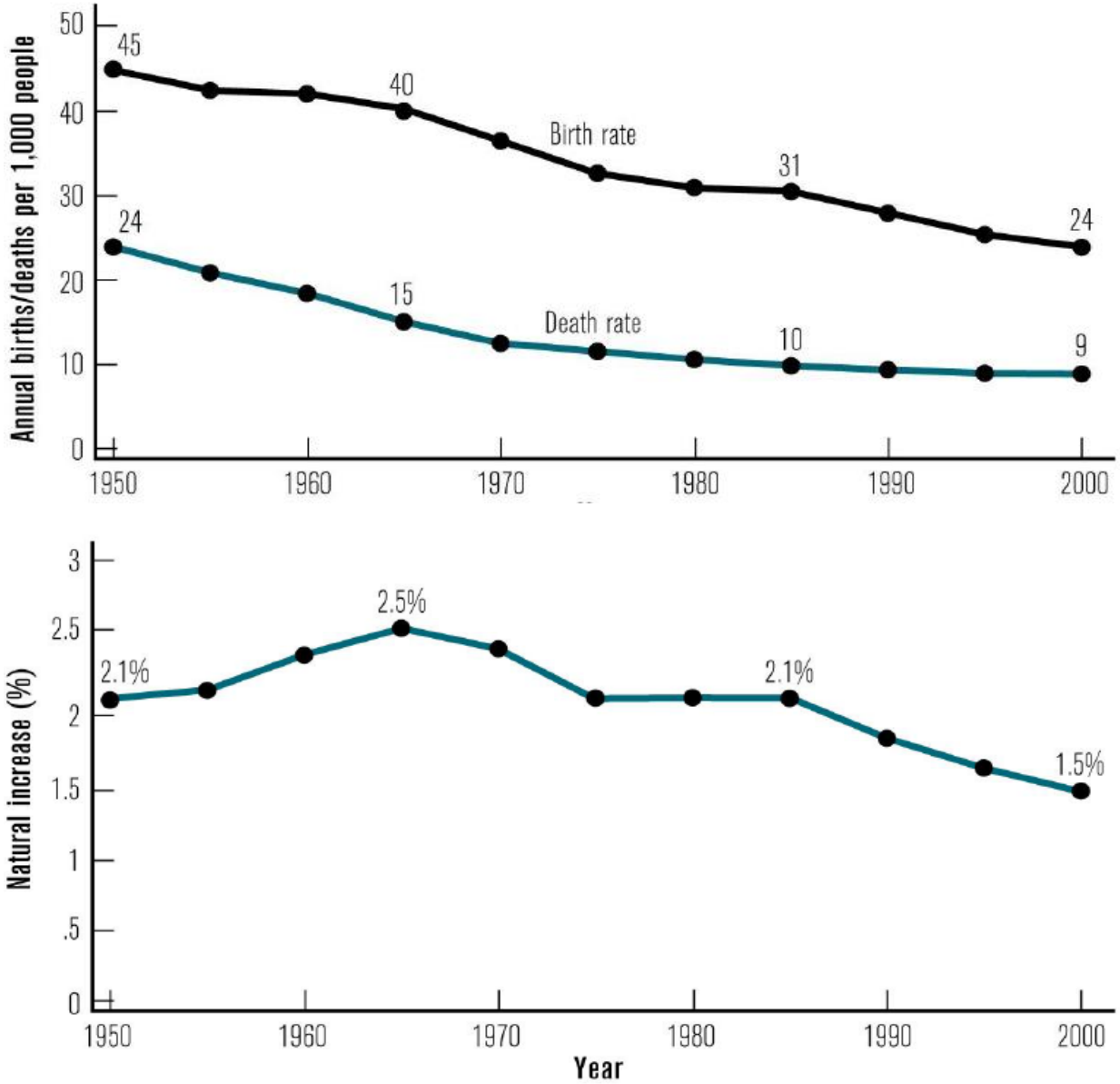
Demographic Transition

- Demographic transition occurs when population starts with low growth rates due to **high birth rates and high death rates**, moves through rapid growth stage with **high birth rates and low death rates**, and later becomes stable with low growth rates where **both birth and death rates are low**.
- Some definitions:
  - Crude birth rate = the number of live births per 1000 people (per year)
  - Crude death rate = the number of deaths per 1000 people (per year)
  - Natural increase = crude birth rate – crude death rate

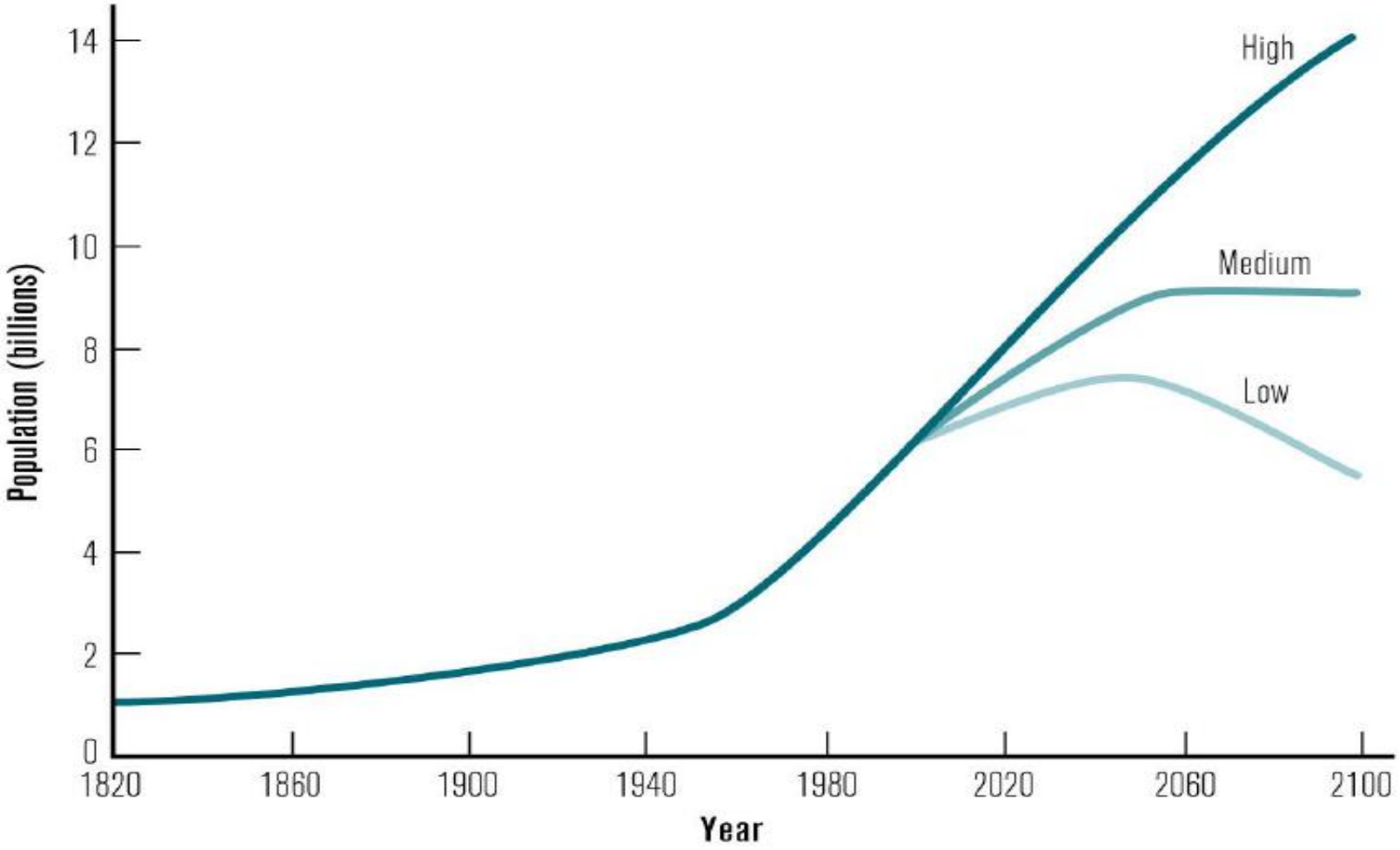
Demographic Transition for Finland, 1785-2003



Demographic Transition for Less-Developed Regions, 1950-2000



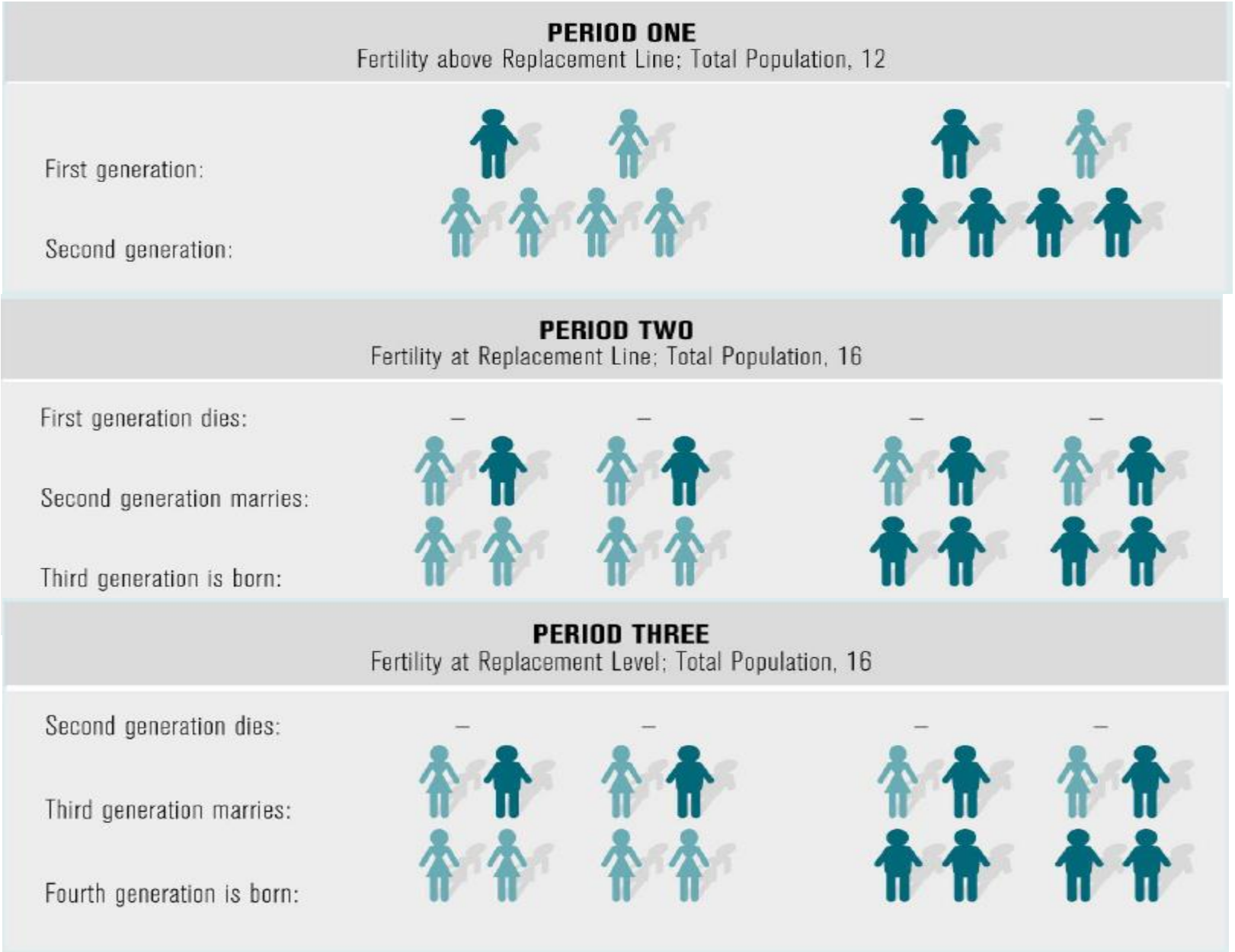
World Population Historical Trends and Projections



The Demographic Future

- For all three scenarios, world population is expected to continue to grow over the next 50 years due to:
  - A desire for large families
  - A failure to achieve the desired number of children
  - Population momentum
- Population momentum is a dynamic latent process of population growth that continues *even after the birth rates fall* due to large youthful population that widens population's parent base.
  - This implies a given population will not stabilize until 2 or 3 generations.

Population Momentum



Most Populous Countries, 2010 and 2050

2010

COUNTRY	POPULATION (MILLIONS)
China	1,338
India	1,189
United States	310
Indonesia	235
Brazil	193
Pakistan	185
Bangladesh	164
Nigeria	158
Russia	142
Japan	127

2050

COUNTRY	POPULATION (MILLIONS)
India	1,748
China	1,437
United States	423
Pakistan	335
Nigeria	326
Indonesia	309
Bangladesh	222
Brazil	215
Ethiopia	174
Congo, Dem. Rep.	166

Source: Population Reference Bureau, *2010 World Population Data Sheet*, www.prb.org/pdf10/10wpds_eng.pdf.

The Causes of Population Growth

- Thomas Malthus was population "pessimist".
- Malthus believed that "passion between the sexes" would cause population to grow as long and far as food supplies permitted.
  - He argued population grows geometrically and food production grows arithmetically at best, leading to famines and starvation.
- It can only prevented by natural *positive checks* such as epidemics, famines, plague, natural disasters, and wars.
- Malthus did not live long enough to see European population growth decline.
- *Why did Birth Rates Decline in spite of Malthus pessimism?*

Why Birth Rates Decline?

- Alternative view: Children impose costs and incur benefits.
- Economic costs of children: Explicit (cash outlays) & Implicit (opportunity costs)
- Implications of viewing children as an "economic decision":
  - Fertility should be higher when children earn income and contribute to the household.
  - Reducing infant deaths should lower fertility.
  - Institutionalized social security and pension will lower the need for parents to depend on their children for support in their old age.
  - Fertility should be lower if there is more opportunity for employment, especially for women.
  - Fertility may be higher with higher income because the explicit costs are more easily borne.

Becker's Theory of Household Economics

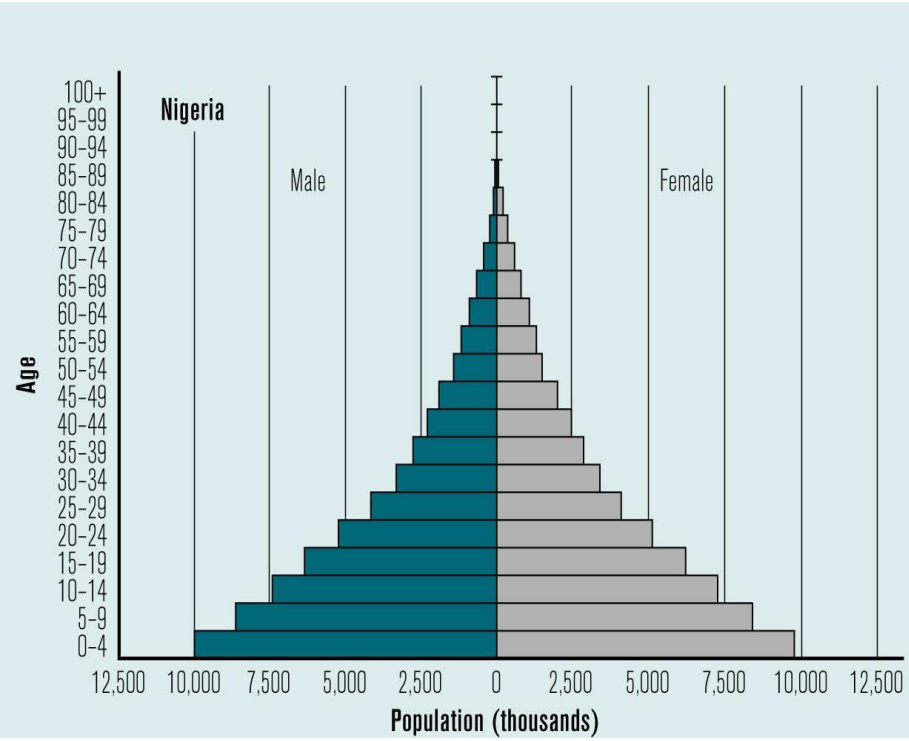
- Gary Becker analyzed whether children are "normal" or "inferior" goods.
  - Couples maximize *joint total utility function* from having children which is a function of the following factors: (i) number of children, (ii) child quality (associated with health &education), (iii) goods and services, subject to constraints of time and income or cost of goods and services.
  - Fertility falls as income rises over time due to higher cost of children, especially when the opportunity cost of parents' time goes up.
  - Given the rising cost of child *quantity*, parents opt to invest in child *quality* and spend more time and money on a smaller number of children. ➔ demand for children is a "normal good".

Population and Accumulation

- Population pessimists - perceived population growth as harmful to economic development.
- Coale and Hoover argue that a *reduction in birth rate could raise per capita income* in three ways:
  1. With lower fertility, capital per worker for growing number of workers (*capital widening*) would decrease and permit more investment to be used to increase capital per worker (*capital deepening*).
  2. With lower fertility, investment will be diverted away from education and health toward physical capital investment.
  3. Slow population growth would lower *dependency ratio*, which is the ratio of non-working population (0-14 & 65 and over) divided by total working population.

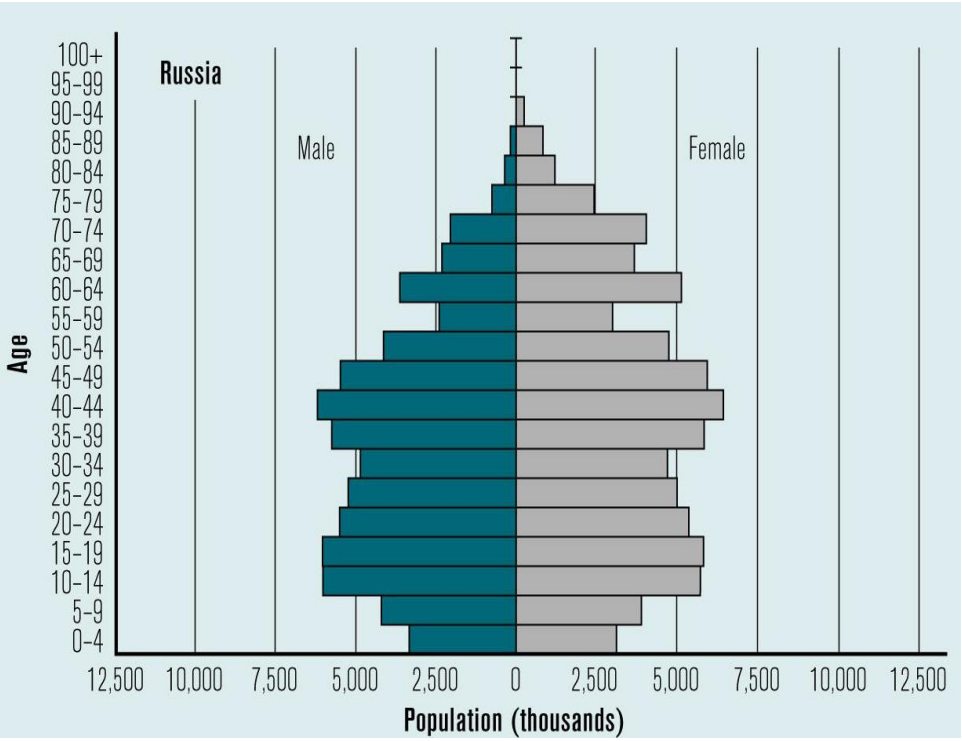
Population Growth, Age Structure, and Dependency Ratios

Nigeria



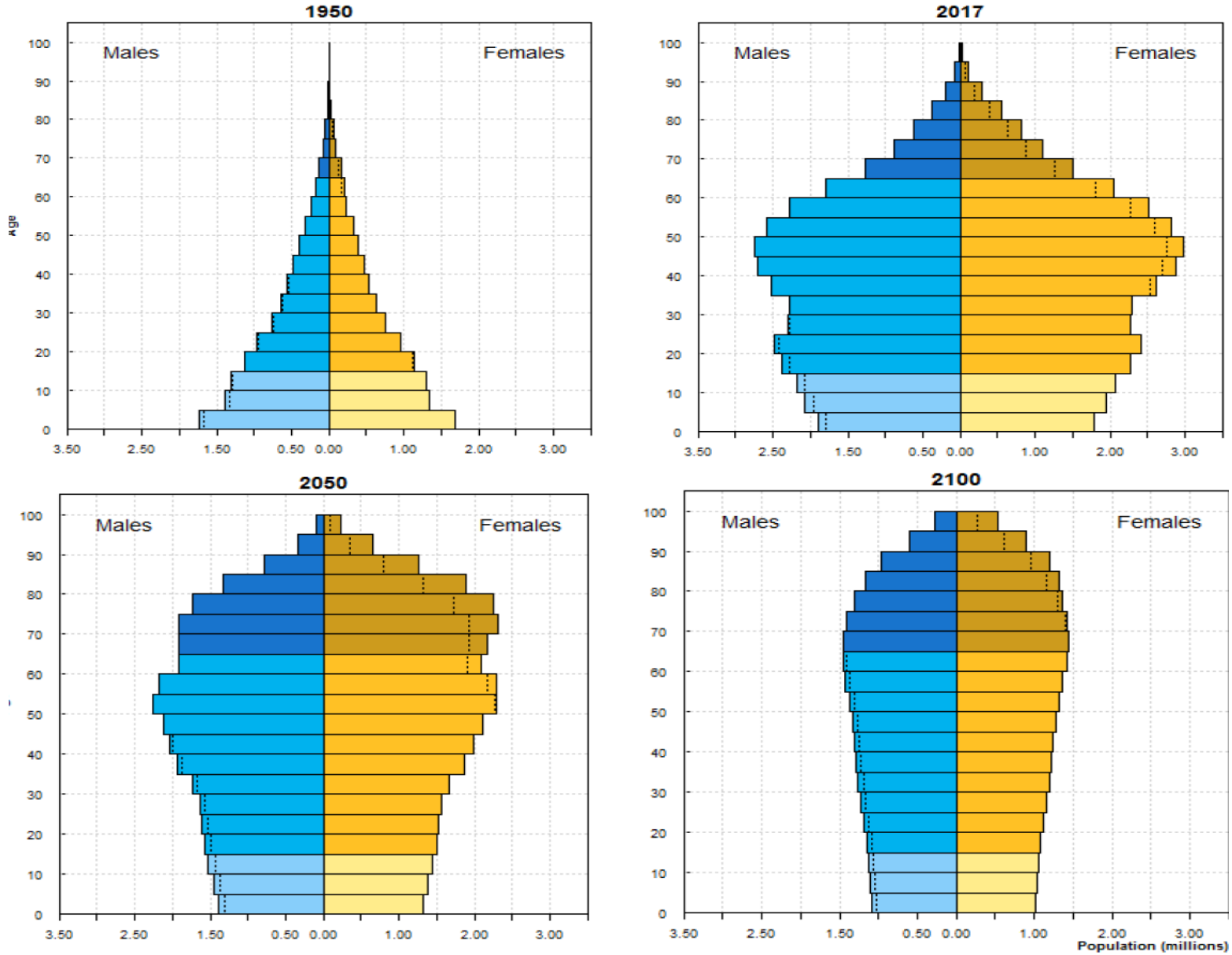
Pop growth = 2.1
TFR = 5.7
Youth dependency ratio = 0.87

Russia



Pop growth = -0.35
TFR = 1.5
Youth dependency ratio = 0.21

Thai Population Projection



Population and Productivity

- Population optimists – view population growth as having the potential to increase factor productivity.
- Why?
  1. A larger population can yield economies of scale in production and consumption.
  2. There's some evidence that population pressures can induce technological change.
  3. Julian Simon - a larger population contains more entrepreneurs and other creators, who can make major contribution to solving the problems of humanity.

Population and Market Failures

- Population revisionists (or population neutralists) – there is no one size that fits all on population matters.
- Revisionists argue that the problem has to do with market failures where costs and benefits of households reproductive behavior are not fully borne by them.
- The fundamental problem is *not too many people*, but *the lack of well defined property rights*.
  - "The tragedy of commons" – pop growth can destroy a common resource.
  - If population grows too quickly, there can be congestion of government services.
  - Pay attention to a failure in the market for contraception
- Population revisionists also focus on other dimensions of human welfare, e.g. income distribution.

Population Policy

- Reducing birth rates is one solution to lower population growth. But How?
- Family planning or broad-based socioeconomic development
  - *Educating girls*
  - All policies that *promote economic development* → more education, better health, higher per capita income → lower fertility
  - Family Planning Programs: Use of persuasion and education to influence couples to have less children, or reduce *unwanted births*
- Authoritarian approaches
  - Chinese one child policy campaign in 1979
    - Dramatic decline in fertility
    - Rapidly ageing population in the next decades
    - Growing imbalance between the number of males and females